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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,513	02/04/2000	Yoshitaka Kawanabe	Q057824	7577

7590

09/25/2003

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EXAMINER

WILLIAMS, DEMETRIA A

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/497,513

Applicant(s)

KAWANABE, YOSHITAKA

Examiner

Demetria A. Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5 and 8-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5 and 8-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 4, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan et al ("Sullivan") in view of Nakazawa and Shou et al ("Shou"), and further in view of Hirschfield et al ("Hirschfield").

3. Regarding claim 3, Sullivan discloses a communications system comprising at least one mobile station and one base station wherein antennas receive the transmitted waves (see generally column 4, lines 9-10), a receiving portion which converts the signals to intermediate frequencies and performs analog-to-digital conversion (see generally column 5, lines 1-10), and a signal processing portion which performs a de-spreading operation for identifying a code of interest and judges the arrival direction of each of the waves (see generally column 4, lines 25-50). Sullivan does not disclose a frequency shift portion prior to combining the signals, nor does he disclose that the signal-processing portion includes fading compensation means.

Nakazawa discloses a communications system comprising a receiver for receiving a plurality of waves wherein the frequency of the received waves is shifted by different degrees for each antenna and then combined in a combiner (see generally column 14, lines 11-50). By shifting the frequencies and then combining the waves, the combined signal that is formed does not have overlapping components. Therefore, it would have

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been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include a frequency shifting portion, as taught by Nakazawa, in order to prevent frequency overlap in the combined signal. Even though Nakazawa doesn't disclose the elements which make up the frequency shift portion, it is well known to those skilled in the art, and evidenced by Hirschfield, that frequency shifters comprise amplifiers, oscillators, and mixers (see generally column 3, lines 35-39).

Shou discloses a communications system having a RAKE receiver wherein fading compensation is performed by RAKE processing based on the demodulation signal (see generally column 9, lines 23-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include fading compensation, as taught by Shou, in order to compensate for signal interference which occurs when signals are received through a plurality of routes.

4. Regarding claims 4 and 9, Sullivan discloses a communications system comprising at least one mobile station and one base station wherein antennas receive the transmitted waves (see generally column 4, lines 9-10), a receiving portion which converts the signals to intermediate frequencies and performs analog-to-digital conversion (see generally column 5, lines 1-10), and a signal processing portion which performs a de-spreading operation for identifying a code of interest and judges the arrival direction of each of the waves (see generally column 4, lines 25-50). Sullivan does not disclose a frequency shift portion prior to combining the signals, nor does he disclose that the signal-processing portion includes fading compensation means.

Nakazawa discloses a communications system comprising a receiver for receiving a plurality of waves wherein the frequency of the received waves is shifted by different

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degrees for each antenna and then combined in a combiner (see generally column 14, lines 11-50). By shifting the frequencies and then combining the waves, the combined signal that is formed does not have overlapping components. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include a frequency shifting portion, as taught by Nakazawa, in order to prevent frequency overlap in the combined signal. Even though Nakazawa doesn't disclose the elements which make up the frequency shift portion, it is well known to those skilled in the art, and evidenced by Hirschfield, that frequency shifters comprise amplifiers, oscillators, and mixers (see generally column 3, lines 35-39). Further, using a single oscillator and multipliers to process different paths is well known in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a reference oscillator and frequency multipliers to reduce the complexity of the circuit.

Shou discloses a communications system having a RAKE receiver wherein fading compensation is performed by RAKE processing based on the demodulation signal (see generally column 9, lines 23-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include fading compensation, as taught by Shou, in order to compensate for signal interference which occurs when signals are received through a plurality of routes.

5. Regarding claim 8, Sullivan discloses a communications system comprising at least one mobile station and one base station wherein antennas receive the transmitted waves (see generally column 4, lines 9-10), a receiving portion which converts the signals to intermediate frequencies and performs analog-to-digital conversion (see

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generally column 5, lines 1-10), and a signal processing portion which performs a de-spreading operation for identifying a code of interest and judges the arrival direction of each of the waves (see generally column 4, lines 25-50). Sullivan does not disclose a frequency shift portion prior to combining the signals, nor does he disclose that the signal-processing portion includes fading compensation means. While Sullivan does not specifically disclose an embodiment of the plurality of antennas as an adaptive array antenna, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan, for use with an adaptive array antenna, as it is well known in the art that an adaptive array system is simply a plurality of antennas arranged having separate weighting vectors.

Nakazawa discloses a communications system comprising a receiver for receiving a plurality of waves wherein the frequency of the received waves is shifted by different degrees for each antenna and then combined in a combiner (see generally column 14, lines 11-50). By shifting the frequencies and then combining the waves, the combined signal that is formed does not have overlapping components. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include a frequency shifting portion, as taught by Nakazawa, in order to prevent frequency overlap in the combined signal. Even though Nakazawa doesn't disclose the elements which make up the frequency shift portion, it is well known to those skilled in the art, and evidenced by Hirschfield, that frequency shifters comprise amplifiers, oscillators, and mixers (see generally column 3, lines 35-39).

Shou discloses a communications system having a RAKE receiver wherein fading compensation is performed by RAKE processing based on the demodulation signal (see

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generally column 9, lines 23-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include fading compensation, as taught by Shou, in order to compensate for signal interference which occurs when signals are received through a plurality of routes.

6. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan et al ("Sullivan") in view of Nakazawa and Shou et al ("Shou"), and further in view of Durrant et al ("Durrant").

7. Sullivan discloses a communications system comprising at least one mobile station and one base station wherein antennas receive the transmitted waves (see generally column 4, lines 9-10), a receiving portion which converts the signals to intermediate frequencies and performs analog-to-digital conversion (see generally column 5, lines 1-10), and a signal processing portion which performs a de-spreading operation for identifying a code of interest and judges the arrival direction of each of the waves (see generally column 4, lines 25-50). Sullivan does not disclose a frequency shift portion prior to combining the signals, nor does he disclose that the signal-processing portion includes fading compensation means. While Sullivan does not specifically disclose an embodiment of the plurality of antennas as an adaptive array antenna, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan, for use with an adaptive array antenna, as it is well known in the art that an adaptive array system is simply a plurality of antennas arranged having separate weighting vectors.

Nakazawa discloses a communications system comprising a receiver for receiving a plurality of waves wherein the frequency of the received waves is shifted by different

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degrees for each antenna and then combined in a combiner (see generally column 14, lines 11-50). By shifting the frequencies and then combining the waves, the combined signal that is formed does not have overlapping components. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include a frequency shifting portion, as taught by Nakazawa, in order to prevent frequency overlap in the combined signal.

Shou discloses a communications system having a RAKE receiver wherein fading compensation is performed by RAKE processing based on the demodulation signal (see generally column 9, lines 23-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Sullivan to include fading compensation, as taught by Shou, in order to compensate for signal interference which occurs when signals are received through a plurality of routes.

None of the above-described references specifies that a phase difference is retained between the received signal and the demodulation signal. However, as Durrant points out, signals generated in the receiver will usually have differences in phase that those from the transmitter causing the demodulated signal to differ in phase from the received signal (see generally column 1, line 60 – column 2, line 12). Therefore, it would have been obvious to one of ordinary skill in the art that a phase difference would be retained between the received and demodulated signals because the local signal generated in the receiver differs from that of the transmitter.

Remarks

8. The finality of the previous rejection has been withdrawn in light of the newly applied art. Examiner regrets any inconvenience to the applicant.

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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ashe discloses a receiver system where a reference oscillator and frequency multipliers are used instead of using a plurality of oscillators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Demetria A. Williams whose telephone number is (703) 305-4078. The examiner can normally be reached on Monday - Friday, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (703) 306-3034. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

daw


MOHAMMAD H. GHAYOUR
PRIMARY EXAMINER